<u>REMARKS/ARGUMENTS</u>

The claims are rejected under 35 USC §103(a) as being unpatentable over Boldridge et al U.S. Patent #4,712,092 in each in view of one or more of Barry et al U.S. Patent #6,014,131, Alexander Patent #3,706,905 or Cherry U.S. Patent #4,529,848.

The present application discloses a keyboard with movable keys for accommodating handicapped users. Each of these keyboard keys is marked with a self-defining indicator that moves with the key. A matrix of key sensing circuits for the keyboard is configured to detect this indicator on a key irrespective of the keys position in the keyboard when that key is depressed. This provide an output to a keyboard controller which in turn provides key signals to the keyboard's connector that is indistinguishable by a computer system from the output of the standard QWERTY keyboard. This enables the disabled user to modify key positions on the keyboard to accommodate the users disability and carry this keyboard from one computer system to another and simply exchange it for the standard keyboard for the computer. As a result, there are no changes required to be made to the computer's operating system or any software of the computer in order to allow the disabled user to use the computer. Furthermore, other users are not required to reconfigure the computer system after the standard keyboard has been reinstalled.

As pointed out above, the keys in the keyboard of the present application are movable and carry an identifying indicator along with them which keys and indicators are movable from position to position on the keyboard. These movable keys with their indices enable the keyboards to be easily reconfigured to accommodate the users disability. In the Boldridge patent the keys are not easily movable and do not contain an indicator identifying the key being pressed to the matrix. Each of the keys of the Boldridge patent contain an unmarked plunger with an

identical percussion tip 20 which strikes plate 30 attached to the matrix element 32 through a mask 37 which contains the key identification materials. Further, the key 11 is fixed to the surface 14 of the keyboard and cannot be moved without disassembly of the keyboard and the keys. Therefore the keys cannot be moved from one position to another carrying with them the identifying indicia as described in the present application. Use of relegendable LCD keyswitches does not change the configuration of the Boldridge keys. The keys still cannot be moved and if they were movable, the indicia fixed to the matrix would not be indicative of the keystroke selected by the user.

The claims in the application all distinguish from the prior art for the above and other reasons. For instance, original claim 1 calls for keys that contain a multi-bit binary code therein and are capable of being positioned in any one of the positions in the keyboard. New independent claim 10 calls for the keys being movable so that any key and its character identifiable code can be placed in any key position and having a circuit matrix capable of detecting the binary code when one of the keys is contacted. The independent claims further distinguish over the prior art in that they call for additional structure. For instance new claims 9 and 16 disclose the structure of the keys which enable movement of the keys from one keyboard position to another.
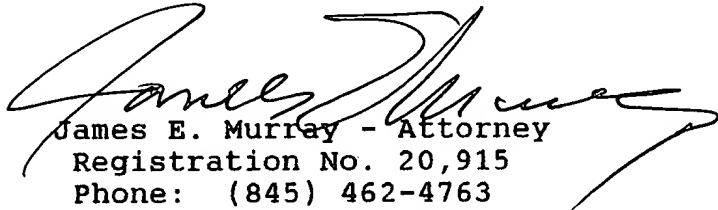
<u>Rejection Under 35 USC §112</u>

Claim 1 has been amended to change "circuit board" to -- circuit matrix -- for which there is an antecedent basis.

Attached hereto is a marked-up version of the changes made to the claims by the current amendment. The attached page is captioned "<u>Version with markings to show changes made.</u>"

For the above reasons, it is respectfully submitted that all claims are allowable, and the application is in condition for allowance. Therefore it is respectfully requested that it be reconsidered, allowed and passed to issue.

RESPECTFULLY SUBMITTED,

James E. Murray - Attorney
Registration No. 20,915
Phone: (845) 462-4763
Fax: (845) 432-9601

VERSION WITH MARKINGS TO SHOW CHANGES MADE

In the Claims

Claim 7 has been canceled.

Claim 1 has been amended as follows:

1   1. (Amended) Data entry device comprising:

2   a keyboard having a plurality of multifunction key

3   positions;

4   a plurality of keys each key containing an inscription on

5   the keycap thereof representing a character or function and

6   containing a multi-bit binary code therein identifying the

7   character or function, said keys being capable of being

8   positioned in any one of the key positions in the keyboard, said

9   keys being responsive to user contact to the keycaps thereof;

10   a circuit matrix disposed below said keyboard said circuit

11   [board] <u>matrix</u> being capable of detecting the binary code when

12   one of the keys is contacted to produce an electrical signal

13   representative of the binary code associated with the contacted

14   key;

15   a standard interface connector to connect the keyboard to a

16   computer; and

17   a controller for converting the output of the circuit matrix

18   for the contacted key to one which is recognizable by the

19   computer so that the output of the keyboard provides to the

20   standard interface connector correctly, identifies the contacted

21   keys character or function to the computer irrespective of the

22   position of the key on the keyboard.

Claim 2 has been amended as follows:

1   2. (Amended) The data entry device of Claim 1, wherein the

2   controller includes a look-up table responsive to the multi-bit

3   output of the circuit matrix <u>the multi-bit codes for each of the</u>

4   keys to provide a standard scan code signal recognizable by [a]
5   any computer [to] compatible with the interface connector.

Claim 3 has been amended as follows:

1   3.   (Amended) The data entry device of Claim [1] 2 wherein the
2   keys have in the base of the key a plurality of locations each
3   representing one digit in the multi-bit binary code and one or
4   more pins each positioned one of the locations so that the keys
5   all contain a different combination of locations with posts and
6   without posts to identify them distinctively from the other keys
7   in accordance with the multi-bit binary code.

Claim 4 has been amended as follows:

1   4.   (Amended) The data entry device of Claim [1] 2 wherein the
2   keys each have a circuit embedded therein storing the multi-bit
3   binary code identifying [the] each key distinctively from the
4   other keys and have electrical contacts providing excitation to
5   the circuit and connecting it to the matrix to provide a multi-
6   bit code signal to the controller to identify the key.

The following new claims have been added:

1   9.   The data entry device of Claim 2 wherein the keyboard has
2   openings to accept the keys and expose the multi-bit binary code
3   stored therein to the circuit matrix wherein the keys are spring
4   loaded with arms with feet that hold the keys in position and are
5   flexible to enable removal of the key and the binary code therein
6   from the keyboard to permit selective placement of the keys in
7   desired keyboard locations.

1 10. Data entry device for the disabled comprising:
2   a keyboard having a plurality of multifunction key
3 positions;
4   a set of movable keys each key of the set containing an
5 inscription on the keycap thereof representing a different
6 character or function of the key in the set and containing a
7 multi-bit binary code stored therein identifying the character or
8 function of the particular key, said keys being capable of being
9 positioned in any one of the key positions in the keyboard so
10 that any key and its character identifying code can be placed in
11 any key position, said keys being responsive to user contact to
12 the keycaps thereof,
13   a circuit matrix disposed below and in a fixed relationship
14 to said keyboard, said circuit matrix having detection positions
15 for each of the plurality of keys which detection positions are
16 each capable of detecting the binary code of the keys when that
17 key is contacted to produce an electrical signal representative
18 of the binary code associated with the contacted key;
19   a standard interface connector to connect the keyboard to
20 any computer compatible with the interface; and
21   a controller for converting the output of the circuit matrix
22 for any contacted key to one which is recognizable by the
23 computer so that the output of the keyboard provided to the
24 standard interface connector correctly identifies the contacted
25 keys character or function to the computer irrespective of the
26 position of the contacted key on the keyboard so that the key can
27 be moved to configure the keys on the keyboard in accordance with
28 a users disability.

1 11.   The data entry device of Claim 10, wherein the controller
2 includes a look-up table responsive to the multi-bit output of
3 the circuit matrix of each of the keys to provide a standard scan
4 code signal recognizable by any computer compatible with the
5 interface connector.

1   12.   The data entry device of Claim 10 wherein the keys have in
2   the base of the key and movable with key a plurality of locations
3   each representing one digit in the multi-bit binary code and one
4   or more pins each positioned one of the locations so that the
5   keys all contain a different combination of locations with posts
6   and without posts to identify them distinctively from the other
7   keys in accordance with the multi-bit binary code.

1   13.   The data entry device of Claim 10 wherein the keys each have
2   a circuit embedded therein storing the multi-bit binary code
3   identifying each key distinctively from the other keys and have
4   electrical contacts providing excitation to the circuit and
5   connecting it to the matrix to provide a multi-bit code signal to
6   the controller to identify the key.

1   14.   The data entry device of Claim 11 wherein the circuit matrix
2   provides the bits of the multi-bit binary code to the controller
3   in parallel.

1   15.   The data entry device of Claim 12 wherein the circuit matrix
2   provides the bits of the multi-bit binary code to the controller
3   serially.

1   16.   The data entry device of Claim 11 wherein the circuit matrix
2   contains a plurality of capacitive switches each switch
3   responsive to one of the pins to generate a key make signal.

1   17.   The data entry device of Claim 2 wherein the keyboard has
2   openings to accept the keys and expose the multi-bit binary code
3   stored therein to the circuit matrix wherein the keys are spring
4   loaded with arms with feet that hold the keys in position and are
5   flexible to enable removal of the key and the binary code therein
6   from the keyboard to permit selective placement of the keys in
7   desired keyboard locations.